

IN THE CLAIMS:

Please amend the claims as follows:

Claim 1 (Currently Amended): A metal spinning method for forming a work of a metal sheet by pushing the work onto a rotating mandrel using a forming roller,

the metal spinning method comprising the steps of:

driving actuators of the forming roller with feedback signals from a force sensor fitted to the forming roller, to control a pushing force of the forming roller; and

forming the work following the cross section shape of the mandrel, so that the product having a non-circular cross section normal to the axis of rotation can be formed, wherein

the shape of the mandrel near the point of the forming roller contacting with the work is estimated based on the motion of the forming roller from a time point before one rotation of the mandrel; and

according to the estimation, the rotational speed of a motor for rotating the mandrel is controlled for the forming operation.

Claim 2 (Currently Amended): The metal spinning method as set forth in claim 1, wherein

the motion of the forming roller in the forming operation is stored;

~~the shape of the mandrel near the point of the forming roller contacting with the work is estimated based on the motion of the forming roller from a time point before one rotation of the mandrel; and~~

~~according to the estimation, the rotational speed of a motor for rotating the mandrel is controlled for the forming operation.~~

Claim 3 (Original): The metal spinning method as set forth in claim 1, wherein

a jig shaped to merge into the front surface of the mandrel is used to clamp the work fixedly between the mandrel and the jig; and

the forming roller is fed at first in the direction of the axis of rotation of the mandrel while being pushed onto the jig, so that the forming operation of the work is smoothly started.

Claim 4 (Currently Amended): A metal spinning apparatus comprising:

a forming roller having a force sensor fixed thereto, and

actuators for driving the forming roller, wherein

the actuators drive the forming roller to spin a work of a metal sheet by pushing the work onto a rotating mandrel;

the actuators control a pushing force of the forming roller with feedback signals from the force sensor; and

the forming roller forms the work following the cross section shape of the mandrel, so that the product having a non-circular cross section normal to the axis of rotation of the mandrel can also be formed, wherein

the shape of the mandrel near the point of the forming roller contacting with the work is estimated based on the motion of the forming roller from a time point before one rotation of the mandrel; and

according to the estimation, the rotational speed of a motor for rotating the mandrel is controlled.

Claim 5 (Currently Amended): The metal spinning apparatus as set forth in claim 4, wherein the motion of the forming roller in the forming operation is stored;

~~the shape of the mandrel near the point of the forming roller contacting with the work is estimated based on the motion of the forming roller from a time point before one rotation of the mandrel; and~~

~~according to the estimation, the rotational speed of a motor for rotating the mandrel is controlled.~~

Claim 6 (Original): The metal spinning apparatus as set forth in claim 4, further comprising:

a jig shaped to merge into the front surface of the mandrel and capable of clamping the work fixedly between the mandrel and the jig; and

the forming roller is fed at first in the direction of the axis of rotation of the mandrel while being forced onto the jig, so that the forming operation of the work is smoothly started.